ABSTRACT OF THE DISCLOSURE

A redundant structure control device for an exchange having an (N+1) redundant structure, capable of separately dealing with trouble that has happened at any line and trouble that has happened at any line interface device, in an ATM exchange having a redundant structure. When line trouble monitoring means detects line trouble, routing control means arranges frame tag attaching means so that a frame coming from a line interface device originally connected with a line at which trouble has happened toward the line at which trouble has happened may be sent out to a spare line. When the routing control means detects trouble happening at a line interface device, the routing control means arranges the frame tag attaching means so that a frame coming from a line originally connected with the line interface device at which trouble has happened may be sent out to a spare line interface device and a frame coming from the spare line interface device may flow to the line originally connected with the line interface device at which trouble has happened, and instructs tag changing means to change a tag of a cell coming from an ATM switch toward the line interface device at which trouble has happened, to a value indicating that the cell should be sent to the spare line interface device.